

**METHOD AND APPARATUS FOR AUTOMATICALLY SENDING AWAY
NOTIFICATIONS IN AN EMAIL MESSAGING SYSTEM**

BACKGROUND OF THE INVENTION

1. Technical Field:

The present invention relates generally to an improved data processing system and in particular to a method and apparatus for managing email messages. Still more particularly, the present invention provides a method, apparatus, and computer instructions for managing sending of away notifications in an email messaging system.

2. Description of Related Art:

The Internet, also referred to as an "internetwork", is a set of computer networks, possibly dissimilar, joined together by means of gateways that handle data transfer and the conversion of messages from a protocol of the sending network to a protocol used by the receiving network. When capitalized, the term "Internet" refers to the collection of networks and gateways that use the TCP/IP suite of protocols.

The Internet has become a cultural fixture as a source of both information and entertainment. Many businesses are creating Internet sites as an integral part of their marketing efforts, informing consumers of the products or services offered by the business or providing other information seeking to engender brand loyalty. Many federal, state, and local government agencies are also

Docket No. AUS920030641US1

employing Internet sites for informational purposes, particularly agencies which must interact with virtually all segments of society such as the Internal Revenue Service and secretaries of state. Providing informational guides and/or searchable databases of online public records may reduce operating costs. Further, the Internet is becoming increasingly popular as a medium for commercial transactions.

Currently, the most commonly employed method of transferring data over the Internet is to employ the World Wide Web environment, also called "the Web". Other Internet resources exist for transferring information, such as File Transfer Protocol (FTP) and Gopher, but have not achieved the popularity of the Web. In the Web environment, servers and clients effect data transaction using the Hypertext Transfer Protocol (HTTP), a known protocol for handling the transfer of various data files (e.g., text, still graphic images, audio, motion video, etc.). The information in various data files is formatted for presentation to a user by a standard page description language, the Hypertext Markup Language (HTML). In addition to basic presentation formatting, HTML allows developers to specify "links" to other Web resources identified by a Uniform Resource Locator (URL). Users may view various documents, referred to as pages, using a browser program.

The Internet also is used as a medium to provide for the exchange of messages. Specifically, electronic messages, also referred to as email messages, may be sent and received by users through the Internet. Various

Docket No. AUS920030641US1

server computers may function as email servers to facilitate the exchange of email messages between users. Users connect to these email servers from client computers using email programs. In some cases, users may access email messages using a Web based system in which a browser is used to access the messages.

These email systems provide various features and functions. For example, a user may forward email messages received for one address to another address. Another feature is an automatic away or vacation reply. This feature, when enabled, causes a reply to be sent to all incoming mail messages addressed to a particular email address for a user. This automatic notification feature is useful in letting senders of email messages to the user know that the user is away or unavailable for some period of time. One problem with this feature is that the reply is sent to all incoming messages, including spam messages and messages from email lists with broad distribution. A user may not necessarily want everyone to know that the user is away or out of town. Further, replying to a spam message allows the sender to specifically identify the user-address as a valid address.

Therefore, it would be advantageous to have an improved method, apparatus, and computer instructions, for managing replies to received email messages.

Docket No. AUS920030641US1

SUMMARY OF THE INVENTION

The present invention provides a method, apparatus, and computer instructions for sending a notice that a user is away. An away indication is received to enable automatic away notifications for a period of time. Email addresses of recipients to which email messages have been previously sent within a configurable time period are identified to form a set of determined email addresses. A reply is sent with a notification that the user is away only in response to receiving an email message having a same email address within the set of determined email addresses.

BRIEF DESCRIPTION OF THE DRAWINGS

The novel features believed characteristic of the invention are set forth in the appended claims. The invention itself, however, as well as a preferred mode of use, further objectives and advantages thereof, will best be understood by reference to the following detailed description of an illustrative embodiment when read in conjunction with the accompanying drawings, wherein:

Figure 1 is a pictorial representation of a network of data processing systems in which the present invention may be implemented;

Figure 2 is a block diagram of a data processing system that may be implemented as a server;

Figure 3 is a block diagram illustrating a data processing system in which the present invention may be implemented;

Figure 4 is a diagram illustrating components used in managing away notifications;

Figure 5 is a flowchart of a process for maintaining a list of addresses for an automatic notification feature in accordance with a preferred embodiment of the present invention;

Figure 6 is a flowchart of a process for editing a list of addresses in accordance with a preferred embodiment of the present invention;

Figure 7 is a flowchart of a process for managing a list of addresses in accordance with a preferred embodiment of the present invention; and

Docket No. AUS920030641US1

Figure 8 is a flowchart of a process for sending notifications in accordance with a preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference now to the figures, **Figure 1** depicts a pictorial representation of a network of data processing system in which the present invention may be implemented. Network data processing system **100** is a network of computers in which the present invention may be implemented. Network data processing system **100** contains a network **102**, which is the medium used to provide communications links between various devices and computers connected together within network data processing system **100**. Network **102** may include connections, such as wire, wireless communication links, or fiber optic cables.

In the depicted example, server **104** is connected to network **102** along with storage unit **106**. In addition, clients **108**, **110**, and **112** are connected to network **102**. These clients **108**, **110**, and **112** may be, for example, personal computers or network computers. In the depicted example, server **104** functions as an email server to provide an email server to facilitate the exchange of email messages between different users at clients, such as clients **108-112**. Network data processing system **100** may include additional servers, clients, and other devices not shown. Other servers on network data processing system **100** may provide other functions, such as providing Web pages or files.

In the depicted example, network data processing system **100** is the Internet with network **102** representing a worldwide collection of networks and gateways that use the Transmission Control Protocol/Internet Protocol (TCP/IP)

Docket No. AUS920030641US1

suite of protocols to communicate with one another. At the heart of the Internet is a backbone of high-speed data communication lines between major nodes or host computers, consisting of thousands of commercial, government, educational and other computer systems that route data and messages. Of course, network data processing system **100** also may be implemented as a number of different types of networks, such as for example, an intranet, a local area network (LAN), or a wide area network (WAN). **Figure 1** is intended as an example, and not as an architectural limitation for the present invention.

Referring to **Figure 2**, a block diagram of a data processing system that may be implemented as a server, such as server **104** in **Figure 1**, is depicted in accordance with a preferred embodiment of the present invention. Data processing system **200** may be a symmetric multiprocessor (SMP) system including a plurality of processors **202** and **204** connected to system bus **206**. Alternatively, a single processor system may be employed. Also connected to system bus **206** is memory controller/cache **208**, which provides an interface to local memory **209**. I/O bus bridge **210** is connected to system bus **206** and provides an interface to I/O bus **212**. Memory controller/cache **208** and I/O bus bridge **210** may be integrated as depicted.

Peripheral component interconnect (PCI) bus bridge **214** connected to I/O bus **212** provides an interface to PCI local bus **216**. A number of modems may be connected to PCI local bus **216**. Typical PCI bus implementations will support four PCI expansion slots or add-in connectors.

Docket No. AUS920030641US1

Communications links to clients **108-112** in **Figure 1** may be provided through modem **218** and network adapter **220** connected to PCI local bus **216** through add-in boards.

Additional PCI bus bridges **222** and **224** provide interfaces for additional PCI local buses **226** and **228**, from which additional modems or network adapters may be supported. In this manner, data processing system **200** allows connections to multiple network computers. A memory-mapped graphics adapter **230** and hard disk **232** may also be connected to I/O bus **212** as depicted, either directly or indirectly.

Those of ordinary skill in the art will appreciate that the hardware depicted in **Figure 2** may vary. For example, other peripheral devices, such as optical disk drives and the like, also may be used in addition to or in place of the hardware depicted. The depicted example is not meant to imply architectural limitations with respect to the present invention.

The data processing system depicted in **Figure 2** may be, for example, an IBM eServer pSeries system, a product of International Business Machines Corporation in Armonk, New York, running the Advanced Interactive Executive (AIX) operating system or LINUX operating system.

With reference now to **Figure 3**, a block diagram illustrating a data processing system is depicted in which the present invention may be implemented. Data processing system **300** is an example of a client computer. Data processing system **300** employs a peripheral component interconnect (PCI) local bus architecture. Although the depicted example employs a PCI bus, other bus

Docket No. AUS920030641US1

architectures such as Accelerated Graphics Port (AGP) and Industry Standard Architecture (ISA) may be used. Processor **302** and main memory **304** are connected to PCI local bus **306** through PCI bridge **308**. PCI bridge **308** also may include an integrated memory controller and cache memory for processor **302**. Additional connections to PCI local bus **306** may be made through direct component interconnection or through add-in boards. In the depicted example, local area network (LAN) adapter **310**, SCSI host bus adapter **312**, and expansion bus interface **314** are connected to PCI local bus **306** by direct component connection. In contrast, audio adapter **316**, graphics adapter **318**, and audio/video adapter **319** are connected to PCI local bus **306** by add-in boards inserted into expansion slots. Expansion bus interface **314** provides a connection for a keyboard and mouse adapter **320**, modem **322**, and additional memory **324**. Small computer system interface (SCSI) host bus adapter **312** provides a connection for hard disk drive **326**, tape drive **328**, and CD-ROM drive **330**. Typical PCI local bus implementations will support three or four PCI expansion slots or add-in connectors.

An operating system runs on processor **302** and is used to coordinate and provide control of various components within data processing system **300** in **Figure 3**. The operating system may be a commercially available operating system, such as Windows XP, which is available from Microsoft Corporation. An object oriented programming system such as Java may run in conjunction with the operating system and provide calls to the operating system from Java programs or applications executing on data

Docket No. AUS920030641US1

processing system **300**. "Java" is a trademark of Sun Microsystems, Inc. Instructions for the operating system, the object-oriented programming system, and applications or programs are located on storage devices, such as hard disk drive **326**, and may be loaded into main memory **304** for execution by processor **302**.

Those of ordinary skill in the art will appreciate that the hardware in **Figure 3** may vary depending on the implementation. Other internal hardware or peripheral devices, such as flash read-only memory (ROM), equivalent nonvolatile memory, or optical disk drives and the like, may be used in addition to or in place of the hardware depicted in **Figure 3**. Also, the processes of the present invention may be applied to a multiprocessor data processing system.

The depicted example in **Figure 3** and above-described examples are not meant to imply architectural limitations. For example, data processing system **300** also may be a notebook computer or hand held computer in addition to taking the form of a PDA. Data processing system **300** also may be a kiosk or a Web appliance.

The present invention provides a method, apparatus, and computer instructions for managing automatic notifications, such as an away notification or vacation reply made when email messages are received at an address. The mechanism of the present invention selectively generates an automatic notification when an email message is received. In these examples, an automatic notification is sent only in response to

Docket No. AUS920030641US1

messages containing an email address to which a user has recently sent an email message.

Turning next to **Figure 4**, a diagram illustrating components used in managing away notifications. In this example, client **400** includes email program **402** and email database **404**. Email program **402** may be, for example, Microsoft Outlook XP, which is available from Microsoft Corporation. Email program **402** also may be a browser used to access email from a Web based email server.

Email program **402** connects to server **406**, which contains email server process **408** and email database **410**. Email server process **408** and email program **400** may employ various protocols, such as for example, post office protocol 3 (POP3), Internet message access protocol (IMAP), or simple mail transfer protocol (SMTP). An authentication process is performed, and email server process **408** sends and receives email messages from email program **402**.

Messages for a user at client **400** are stored in email database **410**. In the illustrative example in **Figure 4**, the user is one for which the away notifications are managed. These messages are transmitted to email program **402**, which stores the messages locally in email database **404**. Messages sent to other users from email program **402** may be stored in email database **410** at server **406** for transmission to recipients. For example, a recipient may be at client **412**, which includes email program **414** and email database **416**.

Docket No. AUS920030641US1

The automatic notification mechanism of the present invention is implemented as a process within email server process **408** in one embodiment. Addresses for recipients of email messages sent to email server process **408** by a user from a client, such as client **400**, are stored in association with the email address for the user. In these examples the addresses stored for an email address for the user are those found in the "To" field of the email message. Additionally, email addresses in a "CC" or "BCC" field also may be stored. These fields may be automatically used or set as an option by the user. Additionally, the date of when the email message was sent also is stored. This information may be stored in a data structure, such as email database **410**. Alternatively, the data structure may take other forms, such as a file or a folder associated with the user or the address for the user.

These addresses are maintained in the data structure for a configurable period of time. For example, this period of time may be configured as one month, seven months, or one year. After the period of time has expired for the address, the address is removed from the data structure. Further, the email addresses in the data structure may be edited by a user to add or remove addresses. Also, the amount of time for which an address remains in the data structure may be changed for that address such that it is different from other addresses in the data structure.

When an auto notification feature is enabled for a user or an address, email messages received for the email

Docket No. AUS920030641US1

address or user are processed to selectively generate automatic notifications, such as an email vacation reply or some other away notification. With the mechanism of the present invention, only addresses in received email messages that also are present in the data structure are replied to in response to receiving email messages directed to the address or user. In this manner, a vacation notice is not sent to every received email message for a user or email address. In these examples, the automatic notification may be selected for an email address or a user. The user in these examples may have multiple email addresses. When a user is selected, an automatic notification is generated using the mechanism of the present invention for each email address associated with the user. A single list of addresses may be maintained for the email addresses in these examples.

For example, if a user at client **400** sends an email message to a client at **412**, the email address from the user at client **412** is stored in email database **410** for some period of time. If the user at client **400** enables an away notification through email server process **408** then an email message sent by client **412** to the user at client **400** will receive a notification or reply if the period of time has not expired. Otherwise, no reply will be received by the user at client **412**. In this manner, automatic notifications are selectively sent to senders of email messages to an address or a user.

Turning now to **Figure 5**, a flowchart of a process for maintaining a list of addresses for an automatic notification feature is depicted in accordance with a

Docket No. AUS920030641US1

preferred embodiment of the present invention. The process illustrated in **Figure 5** may be implemented in a server, such as email server process **408** in **Figure 4**.

The process begins by detecting the sending of an email message (step **500**). A recipient address is identified (step **502**). This email address is typically identified from the "To" field and also may be from other fields, such as a "CC" field and a "BCC" field. A determination is made as to whether the recipient address is located in the list for the user or sender address (step **504**). In this example, the list is located in a database, such as email database **410** in **Figure 4**. Of course, other data structures, such as a file may be used to store the recipient's email address.

If the recipient's address is not present in the list, the address is stored in the database along with the date (step **506**). Next, a determination is made as to whether additional unprocessed recipient addresses are present (step **508**). If additional recipient addresses are not present, the process terminates. Otherwise, the process returns to step **502** to identify another recipient address for processing.

With reference again to step **504**, if the recipient address is in the list, the date for the recipient address in the list is updated with the new date (step **510**). The process then proceeds to step **508** as described above.

Turning next to **Figure 6**, a flowchart of a process for editing a list of addresses is depicted in accordance with a preferred embodiment of the present invention.

Docket No. AUS920030641US1

The process illustrated in **Figure 6** may be implemented in an email server, such as email server process **408** in **Figure 4**. This process may be employed by a user to edit email addresses on a list used to determine which email messages will receive a notification when an automatic notification feature is enabled.

The process begins by receiving a user input (step **600**). A determination is made as to whether the user input is to add an email address (step **602**). If the input is to add an email address, the address is then added to the list (step **604**). Next, a determination is made as to whether the user is finished editing the list (step **606**). If the user is finished editing the list, the process terminates. Otherwise, the process returns to step **600** as described above.

With reference back to step **602**, if the user input is not to add an email address, a determination is made as to whether the user input is to remove an email address from the list (step **608**). If the user input is to remove an email address, the email address is removed from the list (step **610**) with the process then proceeding to step **606** as described above.

Turning back to step **608**, if the user input is not to remove an email address, the user input is assumed to change the period of time for which an email address remains on the list (step **612**) with the process then proceeding step **606** as described above. In these examples, this period of time may be changed for a single email address or for multiple email addresses in the list.

Docket No. AUS920030641US1

Turning next to **Figure 7**, a flowchart of a process for managing a list of addresses is depicted in accordance with a preferred embodiment of the present invention. The process illustrated in **Figure 7** may be implemented in an email server, such as email server process **408** in **Figure 4**.

The process begins by selecting an email address from a list of email addresses for the user (step **700**). This list is a list of addresses that is used in determining which addresses should receive a notification or reply when the automatic notification feature is enabled. A determination is made as to whether the date when the last email message was sent to the email address was sent within the selected amount of time (step **702**). In other words, a determination is made as to whether the period of time, for which the email address is to be retained in the list, has not expired. If the answer to this determination is yes, the email address is retained in the list, and a determination is made as to whether additional email addresses are present for processing (step **704**). If additional addresses are present, the process returns to step **700**. Otherwise, the process terminates.

With reference again to step **702**, if the selected period of time has expired for the email address, the email address is removed from the list (step **706**). The process then proceeds to step **704** as described above.

Turning next to **Figure 8**, a flowchart of a process for sending notifications is depicted in accordance with a preferred embodiment of the present invention. The

Docket No. AUS920030641US1

process illustrated in **Figure 8** may be implemented in an email server, such as email server process **408** in **Figure 4**.

The process begins by receiving an email message for the address or user in which an automatic notification feature has been enabled (step **800**). In response to receiving the email message, a determination is made as to whether the email address to the sender is found in the list (step **802**). If the email address is found in the list, an away notification is sent to the sender (step **804**) with the process terminating thereafter. In these examples, the indication is a reply message, such as "I am away on vacation and will not check my messages until I return".

Turning back to step **802**, if the sender's email address is not present in the list, the process terminates. In this case, no reply to the email message is sent even though the automatic notification feature is turned on.

Thus, the present invention provides an improved method, apparatus, and computer instructions for sending away notifications to indicate that a user is away and unavailable to check email messages. These notifications are only sent in response to email messages received from senders having an address in a list for the user receiving the email message. Addresses in the list are those from email messages the user has sent within some configurable period of time. Further, the user also may edit the list to add or remove email addresses from the

Docket No. AUS920030641US1

list as well as change the amount of time an email address remains on the list.

It is important to note that while the present invention has been described in the context of a fully functioning data processing system, those of ordinary skill in the art will appreciate that the processes of the present invention are capable of being distributed in the form of a computer readable medium of instructions and a variety of forms and that the present invention applies equally regardless of the particular type of signal bearing media actually used to carry out the distribution. Examples of computer readable media include recordable-type media, such as a floppy disk, a hard disk drive, a RAM, CD-ROMs, DVD-ROMs, and transmission-type media, such as digital and analog communications links, wired or wireless communications links using transmission forms, such as, for example, radio frequency and light wave transmissions. The computer readable media may take the form of coded formats that are decoded for actual use in a particular data processing system.

The description of the present invention has been presented for purposes of illustration and description, and is not intended to be exhaustive or limited to the invention in the form disclosed. Many modifications and variations will be apparent to those of ordinary skill in the art. The illustrated examples use an email server process as a location in which the mechanism of the present invention is implemented. The mechanism of the present invention could be implemented in other

Docket No. AUS920030641US1

components other than an email server. For example, the mechanism of the present invention may be implemented in a client email program, such as client email program **402** in **Figure 4**. In this case, the list of email addresses for the user is stored in a data structure, such as a database or file located at the client or accessible by the client. The embodiment was chosen and described in order to best explain the principles of the invention, the practical application, and to enable others of ordinary skill in the art to understand the invention for various embodiments with various modifications as are suited to the particular use contemplated.